

GENERAL

1.1. ALL MEASURES WILL BE REVIEWED AFTER INSTALLATION AND APPROVED BY OWNER AND CITY OF ANNAPOLIS.

1.2. SUBSTITUTIONS OR ALTERNATIVE METHODS OR MATERIALS SHALL BE REVIEWED AND APPROVED BY THE PROJECT ARBORIST AND CITY OF ANNAPOLIS.

1.3. ALL TREE PROTECTION MEASURES MUST BE IN PLACE PRIOR TO COMMENCEMENT OF DEMOLITION, SITE CLEARING OR CONSTRUCTION AND MAINTAINED THROUGHOUT CONSTRUCTION. TREE PROTECTION MEASURES MAY ONLY BE REMOVED WITH CITY OF ANNAPOLIS APPROVAL.

1.4. REFER TO THE TREE PROTECTION ACTION KEY (TPAK) FOR SPECIFIC RECOMMENDATIONS FOR EACH TREE.

2. REMOVAL BY ARBORIST

2.1. TREES DESIGNATED AS "REMOVAL BY ARBORIST" SHALL BE REMOVED BY A QUALIFIED ARBORIST "BY HAND", TO MINIMIZE POTENTIAL FOR DAMAGE TO REMAINING TREES AND ROOTS.

2.2. CREWS SHALL BE DIRECTLY SUPERVISED BY A CERTIFIED ARBORIST.

2.3. TRUCKS AND MECHANIZED EQUIPMENT SHALL NOT ENTER THE FENCED TREE PROTECTION AREAS.

2.4. STUMPS SHALL BE LEFT IN PLACE OR GROUND OUT AT THE OWNERS DISCRETION. STUMPS IN TURF/LANDSCAPE AREAS OR WITHIN ROOT AERATION MATTING AREAS SHALL BE GROUND.

2.5. STUMP GRINDING SHALL BE WITH SMALL MACHINES SPECIFICALLY DESIGNED FOR THAT PURPOSE. NO STUMPS SHALL BE EXCAVATED EXCEPT AS DESCRIBED HEREIN. STUMPS SHALL BE GROUND NOT MORE THAN 8" BELOW GRADE AND CARE MUST BE TAKEN TO MINIMIZE DAMAGE TO ROOTS OF RETAINED TREES.

3. TREE PROTECTION FENCE

3.1. TYPICALLY, INSTALL AFTER ROOT PRUNING AND PRIOR TO CLEARING & GRADING.

3.2. FENCE SHALL BE ONE OF THE FOLLOWING: (SEE DETAIL)

3.2.1. 6' HIGH CHAIN LINK FENCE FABRIC MOUNTED ON 8", 1.5% GALVANIZED STEEL PIPE LINE POSTS. CORNER POSTS SHALL BE 2". FENCE SHALL BE ATTACHED TO POSTS USING ALUMINUM TIES. PLASTIC "ZIP" TIES SHALL NOT BE USED.

3.2.2. SUPER SILT FENCE INSTALLED PER LOCAL AND STATE EROSION AND SEDIMENT CONTROL REQUIREMENTS AND SIGNED AS TREE PROTECTION.

3.3. TREE PROTECTION AREA SIGNS SHALL BE AFFIXED TO ALL TREE PROTECTION FENCE AT 30' SPACING AVERAGE. SIGNS SHALL BE BILINGUAL (ENGLISH AND SPANISH). SIGNS SHALL NOT BE AFFIXED DIRECTLY TO TREES.

3.4. SILT FENCE SHALL BE COORDINATED FOR INSTALLATION TO ENHANCE PROTECTION AND AVOID UNNECESSARY ROOT CUTS BY SILT FENCE INSTALLATION.

3.5. FILTER LOGS SHALL BE USED ALONG TREE PROTECTION AREAS IN ADDITION TO CHAIN LINK FENCE.

3.6. FENCE MAY BE REMOVED ONLY AFTER ALL CONSTRUCTION AND FINAL LANDSCAPING IS COMPLETE AND WITH CITY OF ANNAPOLIS APPROVAL.

4. TEMPORARY TREE PROTECTION FENCE

4.1. INTENDED TO PROTECT SENSITIVE AREAS DURING PORTIONS OF CONSTRUCTION. SPECIFICALLY, AREAS OF RAM SHALL BE PROTECTED WITH TEMPORARY FENCE UNTIL FILL MATERIAL IS PLACED TO AVOID UNNECESSARY ROOT IMPACTS.

4.2. FENCE SHALL BE 4' HIGH, 14 GAUGE WELDED WIRE FENCE INSTALLED AS ABOVE (SEE DETAIL) OR APPROVED ALTERNATIVE.

4.3. TEMPORARY FENCE SHALL BE REMOVED ONLY WITH ARBORIST APPROVAL.

5. ROOT PRUNE

5.1. THE EXACT LOCATION AND DEPTH WILL BE DETERMINED DURING THE PRE-CONSTRUCTION MEETING. SPECIFIC EQUIPMENT & METHODS WILL BE DETERMINED BY CITY OF ANNAPOLIS BASED UPON DEPTH & TREE IMPACT. (SEE DETAIL)

5.2. HAND PRUNE ROOTS OVER 1.5" DIAMETER WITHIN CRZS OF SIGNIFICANT TREES. STEEP SLOPES, DEEP EXCAVATIONS AND PAVEMENT/CURB REMOVAL WILL BE REVIEWED WHEN OPEN FOR HAND ROOT PRUNING DURING CONSTRUCTION.

5.3. COORDINATE WITH SILT FENCE INSTALLATION TO MINIMIZE UNNECESSARY ROOT DAMAGE.

5.4. ROOT PRUNING SHALL BE PERFORMED BY A CERTIFIED ARBORIST.

6. WOOD CHIP MULCH

6.1. INSTALL MULCH BED RINGS FOR DESIGNATED SIGNIFICANT TREES OR PROVIDE CONTINUOUS MULCH STRIP 10' TO 15' WIDE ALONG LOD WITHIN PRESERVED CRZ AREAS.

6.2. MULCH SHALL BE INSTALLED TO A DEPTH OF 4".

6.3. MULCH SHALL BE DOUBLE GROUND SHREDDED HARDWOOD, AGED FOR AT LEAST 6 MONTHS FROM AN APPROVED SOURCE. INSUFFICIENTLY OR IMPROPERLY AGED MULCH CONTAINING HIGH BACTERIAL COUNTS OR HIGH LEVELS OF BARK OR OTHER MATERIALS RESISTANT TO DECOMPOSITION SHALL NOT BE USED. MULCH SHALL NOT CONTACT TRUNK OF TREES.

6.4. EDGING IS NEITHER NECESSARY NOR DESIRABLE FOR THIS OPERATION.

7. CONSTRUCTION MONITORING/INSPECTIONS

7.1. A CERTIFIED ARBORIST SHALL MAKE REGULAR MONTHLY INSPECTIONS DURING ACTIVE CONSTRUCTION AND DEMOLITION AND PROVIDE REPORTS TO THE OWNER AND CITY OF ANNAPOLIS. REPORTS SHALL DOCUMENT CONDITION OF TREE PROTECTION DEVICES AND PROVIDE RECOMMENDATIONS FOR MAINTENANCE AND/OR ADDITIONAL CARE.

8. MISCELLANEOUS TREE PROTECTION REQUIREMENTS

8.1. NO TOXIC MATERIALS SHALL BE STORED WITHIN 100' OF TREE PROTECTION AREAS.

8.2. ALL WORK IN OR NEAR TREE PROTECTION AREAS SHALL BE PERFORMED IN A MANNER TO MINIMIZE DAMAGE TO TREES, SHRUBS, GROUND COVER, SOIL AND ROOT SYSTEMS.

8.3. MECHANIZED EQUIPMENT SHALL NOT BE PERMITTED TO ENTER ANY TREE PROTECTION AREAS.

9. CANOPY PRUNING & SUPPORT CABLES

9.1. CANOPY PRUNING SHALL BE CLEANING PRUNING AND/OR RESTORATION PRUNING AND SHALL BE IN CONFORMANCE WITH CURRENT ANSI A300 STANDARDS AND ISA BEST MANAGEMENT PRACTICES.

9.2. PRUNING SHALL REMOVE ONLY DEAD, DYING, DAMAGED OR BROKEN BRANCHES GREATER THAN 1" IN DIAMETER. PRUNING OF SMALL TREES MAY INCLUDE REMOVAL OF LIMBS TO IMPROVE STRUCTURE.

9.3. FOLIAGE REMOVAL SHALL NOT BE MORE THAN 25% OF THE TOTAL LIVE CANOPY VOLUME OF ANY TREE IN ANY ONE SEASON. PRUNING SHALL NOT REMOVE INTERIOR BRANCHING EXCEPT AS OTHERWISE STATED.

9.4. PRUNING FOR SPECIFIC CLEARANCE (FOR CONSTRUCTION ACCESS OR PROPOSED IMPROVEMENTS) SHALL BE REVIEWED AND APPROVED BY THE OWNER AND CITY OF ANNAPOLIS.

9.5. SUPPORT CABLES SHALL BE INSTALLED IN CONFORMANCE WITH CURRENT ANSI A300 STANDARDS AND ISA BEST MANAGEMENT PRACTICES.

10. CONSTRUCTION STRATEGIES FOR TREE PROTECTION

10.1. PROPOSED LANDSCAPE PLANTINGS OUTSIDE THE LOD SHALL BE INSTALLED BY HAND. MECHANIZED EQUIPMENT SHALL NOT BE USED OUTSIDE THE LOD OR OFF OF EXISTING PAVED AREAS TO EXCAVATE FOR PLANTINGS OR FOR STAGING PLANT MATERIAL.

10.2. COORDINATE PLANTING LOCATIONS WITHIN CRZS WITH THE CONTRACT ARBORIST TO AVOID UNNECESSARY ROOT DAMAGE. PLANTING PITS WITHIN CRZS SHOULD BE DUG BY HAND. ROOTS GREATER THAN 1.5" SHOULD NOT BE CUT.

11. ROOT PROTECTION MATTING

11.1. TEMPORARY MATTING TO PROTECT EXISTING ROOTS AND SOILS FROM PROPOSED SHORT TERM CONSTRUCTION TRAFFIC IMPACTS.

11.2. TO PREPARE SITE, REMOVE ANY DEBRIS BY HAND AND SPREAD AN EVEN LAYER OF WOOD CHIP MULCH 8-12" THICK OVER THE ENTIRE AREA TO RECEIVE MATTING.

11.3. MATTING SHALL BE INSTALLED IN A SINGLE LAYER ON MULCH.

11.4. TOPSOIL SHALL NOT BE DISTURBED OR REMOVED. NO GRUBBING, GRADING, EXCAVATION OR EQUIPMENT TRAFFIC SHALL BE ALLOWED IN THE AREA TO RECEIVE RPM. EQUIPMENT MAY TRAVEL ON RPM AFTER IT IS INSTALLED, BUT SHOULD BE MINIMIZED. TRACKED EQUIPMENT SHOULD NOT TURN ON RPM TO AVOID DAMAGE.

11.5. MATTING MATERIAL SHALL BE TENSAR ROADRAIN T-5 OR APPROVED EQUIVALENT.

11.6. RPM SHALL BE INSTALLED BY A CERTIFIED ARBORIST.

11.7. RPM SHALL NOT BE REMOVED BY SITE CONTRACTORS.

12. ROOT AERATION MATTING

12.1. PERMANENT MATTING TO PROTECT EXISTING ROOTS AND SOILS FROM PROPOSED GRADE FILLS AND

1. TREE LOCATIONS MAY BE APPROXIMATE. OWNER AND CONTRACT ARBORIST SHALL VERIFY ALL TREE LOCATIONS AND CONDITIONS PRIOR TO CONSTRUCTION AND/OR TREATMENT OR REMOVAL.
2. THE INSPECTION OF THESE TREES CONSISTED SOLELY OF A VISUAL INSPECTION FROM THE GROUND. WHILE MORE ADVANCED TECHNIQUES ARE AVAILABLE FOR INSPECTION AND EVALUATION, THEY WERE NEITHER REQUESTED NOR CONSIDERED NECESSARY OR APPROPRIATE AT THIS TIME.
3. TREES RATED "POOR" OR "DEAD" THAT ARE NOT RECOMMENDED FOR REMOVAL DUE TO CONSTRUCTION IMPACT MAY WARRANT FURTHER EVALUATION AND/OR TREATMENT OR REMOVAL.

- **Certified Arborist:** Credential of an individual arborist issued and administered by the International Society of Arboriculture. This credential must be current and valid to qualify to use the copyrighted designation of "Certified Arborist". Refer to [www.isa-arbor.com](http://www.isa-arbor.com) for additional information.
- **Project Arborist:** Arboricultural firm contracted to provide site investigation and documentation (tree inventories, assessments, forest stand delineations, etc.) and develop tree preservation plans, methods, details and specifications in collaboration with the project design team.
- **Contract Arborist:** Arboricultural firm contracted to implement the approved tree preservation plans on site. **Arborists** conducting arboricultural operations on site shall consist of at least one Certified Arborist who directly oversees all work by that crew. Arboricultural operations include, but are not limited to, pruning, tree protection device installation and maintenance (fence, matting, etc.), root pruning, air tool root excavation/exploration, soil care activities, soil testing, mulch application, tree inspections, pesticide/chemical applications and tree removal.

[illegible]

<div style="text-align: center;"> State of Maryland  Forest Conservation Manual  <b>Preliminary Forest Conservation Worksheet</b>  for  Primrose Hill  4/16/2014 </div>			
	<b>Net Tract Area</b>		<b>ENTIRE PROPERTY</b>
A	Gross Tract Area	A =	4.37
B	Deductions (Critical Area, area restricted by local ordinance or program): floodplain	B =	0.00
C	Net Tract Area (C = A - B)	C =	4.37
	<b>Land Use Category</b>		<b>High Density</b>
	Afforestation Factor ( $F_{\text{afforestation}}$ )		15.00%
	Conservation Factor ( $F_{\text{conservation}}$ )		20.00%
D	Afforestation Threshold (Net Tract Area $\times F_{\text{afforestation}}$ )	D =	0.66
E	Conservation Threshold (Net Tract Area $\times F_{\text{conservation}}$ )	E =	0.87
	<b>Existing Forest Cover</b>		
F	Existing Forest Cover within the Net Tract Area	F =	0.00
G	Area of Forest Above Conservation Threshold	G =	0.00
	If existing forest cover (F) > conservation threshold (E), then G = existing forest cover (F) - conservation threshold (E); otherwise G = 0.		
	<b>Break Even Point</b>		
H	Break Even (Amount of Forest that must be retained so that no mitigation is required)	H =	0.00
	(1) If the area of forest above the conservation threshold (G) is greater than zero, then $H = (0.2 \times \text{the area of forest above conservation threshold (G)}) + \text{Conservation threshold (E)}$ (2) If the area of forest above the conservation threshold (G) = 0, then H = ex. Forest Cover (F)		
I	Forest clearing permitted without mitigation (I = existing forest cover (F) - break even point (H))	I =	0.00
	<b>Proposed Forest Clearing</b>		
J	Total area of forest to be cleared	J =	0.00
	Clearing above conservation threshold		0.00
	Clearing below conservation threshold		0.00
K	Total area of forest remaining (K = existing forest cover (F) - forest to be cleared (J))	K =	0.00
	<b>Note:</b> If forest to remain (K) is greater than or equal to break even point (H), then no planting is required; otherwise, compute the planting requirement below (L, M, N, P, Q and R).		
	<b>Planting Requirements</b>		
L	Reforestation for clearing above the conservation threshold	L =	0.00
	(1) If the total area of forest to be retained (K) $\geq$ conservation threshold (E), then $L = \text{the area of forest to be cleared (J)} \times 0.25$ ; or (2) If the forest to be retained (K) < conservation threshold (E), then $L = \text{the area of forest above conservation threshold (G)} \times 0.25$		
M	Reforestation for clearing below the conservation threshold	M =	0.00
	(1) If existing forest cover (F) > conservation threshold (E) and forest to be retained (K) < conservation threshold (E), then $M = 2.0 \times (E - K)$ (2) If the existing forest (F) $\leq$ conservation threshold (E), then $M = 2.0 \times \text{forest to be cleared (J)}$		
N	Credit for retention above the conservation threshold	N =	0.00
	If the area of the forest to be retained (K) > conservation threshold (E), then $N = K - E$		
P	Total reforestation required (P = L + M - N)	P =	0.00
Q	Total afforestation required	Q =	0.66
	(1) If existing forest cover (F) < afforestation threshold (D), then $Q = \text{the afforestation threshold (D)} - \text{the existing forest cover (F)}$		
R	Total planting requirement (R = P + Q)	R =	0.66

**Note: Refer to sheet LJ-104 for tree replacement calculations. Future forest conservation areas may be required overtop existing and replacement tree areas.**

THIS PLAN IS FOR TREE PRESERVATION PURPOSES ONLY AND NOT FOR CONSTRUCTION. THE PROFESSIONAL'S SEAL IS INVALID ON ANY PLOT THAT DOES NOT INCLUDE AN ORIGINAL INK SIGNATURE.